

ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc..

Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

090278523A

Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

☐

CD(s) containing:

computer program listing

Doc Code: Computer

pages of specification

and/or sequence listing

and/or table

Doc Code: Artifact

content unspecified or combined

Doc Code: Artifact

☐

Artifact Type Code: P

☐

Artifact Type Code: S

☐

Artifact Type Code: U

☐

Stapled Set(s) Color Documents or B/W Photographs

Doc Code: Artifact Artifact Type Code: C

☐

Microfilm(s)

Doc Code: Artifact Artifact Type Code: F

☐

Video tape(s)

Doc Code: Artifact Artifact Type Code: V

☐

Model(s)

Doc Code: Artifact Artifact Type Code: M

☒

Bound Document(s)

Doc Code: Artifact Artifact Type Code: B

☐

Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc.

Doc Code: Artifact Artifact Type Code X

☐

Other, description: _____

Doc Code: Artifact Artifact Type Code: Z



The
United
States
of
America



The Commissioner of Patents
and Trademarks

*Has received an application for a patent
for a new and useful invention. The title
and description of the invention are en-
closed. The requirements of law have
been complied with, and it has been de-
termined that a patent on the invention
shall be granted under the law.*

Therefore, this

United States Patent

*Grants to the person or persons having
title to this patent the right to exclude
others from making, using or selling the
invention throughout the United States
of America for the term of seventeen
years from the date of this patent, sub-
ject to the payment of maintenance fees
as provided by law.*

Bence Lehman

Commissioner of Patents and Trademarks

Karnaly Cooper

Attest



US005494036A

United States Patent [19]

Uber, III et al.

[11] **Patent Number:** **5,494,036**[45] **Date of Patent:** **Feb. 27, 1996**[54] **PATIENT INFUSION SYSTEM FOR USE WITH MRI**[75] **Inventors:** Arthur E. Uber, III, Pittsburgh; Seid Waddell, Sarver; John Stulen; Jon E. Manley, both of Pittsburgh, all of Pa.[73] **Assignee:** Medrad, Inc., Indianola, Pa.[21] **Appl. No.:** 158,055[22] **Filed:** Nov. 26, 1993[51] **Int. Cl.⁶** A61B 6/00[52] **U.S. Cl.** 128/655; 128/DIG. 1; 604/154; 604/131[58] **Field of Search** 128/653.2, 654, 128/655, DIG. 1, DIG. 12; 604/65-67, 27, 890.1, 131, 154, 134[56] **References Cited****U.S. PATENT DOCUMENTS**

3,523,523	8/1970	Reich et al.	128/655
3,812,843	5/1974	Wooten et al.	128/655
4,502,488	3/1985	Degironimo et al.	604/246 X
4,695,271	9/1987	Goethel	604/154 X

4,981,137	1/1991	Kondo et al.	
5,134,373	7/1992	Tsuruno et al.	
5,300,031	4/1994	Neer et al.	128/655 X

FOREIGN PATENT DOCUMENTS

105550A1	9/1983	European Pat. Off.
518100A1	5/1992	European Pat. Off.
495287A3	6/1992	European Pat. Off.

Primary Examiner—William E. Kamm*Assistant Examiner*—Brian L. Casler[57] **ABSTRACT**

This invention relates generally to the field of Magnetic Resonance Imaging (MRI) systems for generating diagnostic images of a patient's internal organs and more particularly, this invention relates to improved MRI systems with decreased interference between the magnetic field used for producing diagnostic images and the magnetic fields generated by the electric motors used for driving the pistons of the contrast media injectors. Additionally, the system employs an improved communication link between an externally located system controller and the injection head control unit located within the electromagnetic isolation barrier which defines the magnetic imaging room.

23 Claims, 2 Drawing Sheets